Sector 10

Materials Research CAT

Overview

The Materials Research CAT (MR-CAT) is composed of groups from four universities (University of Florida, Illinois Institute of Technology, Northwestern University, and University of Notre Dame), a major corporation (British Petroleum) and a federal research laboratory (Argonne National Laboratory/ Chemical Technology and Environmental Research Divisions).

Research Focus

The scientific program of MR-CAT focuses on the study of advanced materials *in situ* as a means of characterizing their structure and electronic properties, as well as understanding their preparation. The primary research techniques of wide- and small-angle scattering, diffraction (single-crystal and powder), absorption spectroscopy (XFS), reflectivity, standing waves, diffraction anomalous fine structure (DAFS), and time-dependent and microfocus techniques are being used to study the following *in situ*:

- structural phase changes, especially in non-equilibrium systems
- disordered systems (e.g., alloys and amorphous materials)
- growth, recrystallization, surfaces, and interfaces of electronic materials
- catalysts (*in situ* time-dependent studies)
- structure of static and dynamic confined liquids
- organic thin films and self-assembling systems
- polymers (e.g., dynamics of block copolymers, single-fiber studies)

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